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(54) Title: INTERNET-BASED MESSAGING SYSTEM
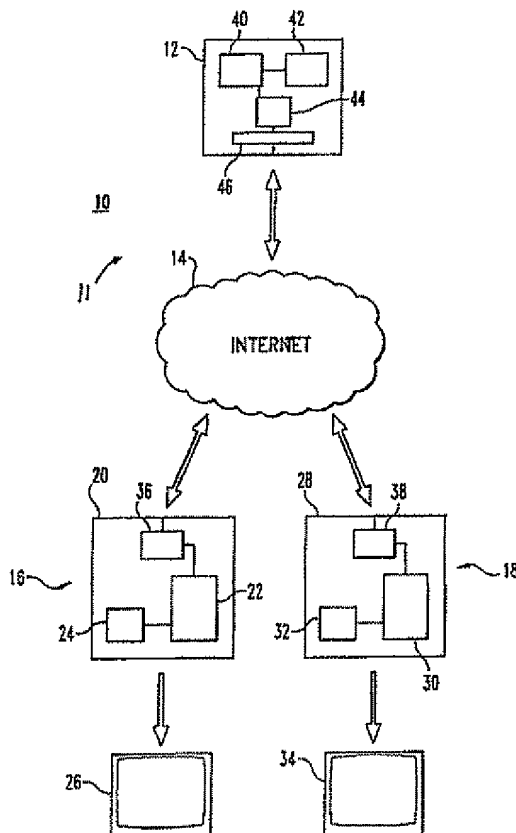
(57) Abstract: A messaging system is disclosed that provides dynamic polling of a message server for use in a stateless communication system. The polling interval may be determined by a user, or it may be determined based on current message activity or on statistics derived from historical message activity. Application-to-application, as well as human-to-human, messaging capability is also disclosed.

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INTERNET-BASED MESSAGING SYSTEM

Reference to Related Applications

This application claims priority from a Provisional Application Serial No.

5   60/436,235, filed December 24, 2002, which is hereby incorporated by reference.

Background of the Invention

The present invention relates to internet-based communications systems

and, more particularly, to a central server messaging system that provides efficient

10   use of server resources.

Computer-based messaging via the internet, and in particular instant

messaging systems, are becoming a popular communication tool that are used by

individuals and businesses alike as an effective means to transfer and relay

information to other individuals, between co-workers, and to or from customers.

15   Instant messaging systems typically operate through the use of a central server,

which routes messages to the proper recipient. This activity, however, consumes

server resources which would otherwise be available for other applications. As it

is often not economically feasible to implement a server exclusively committed to

managing instant messages, the central server must share its resources with the

20   instant messaging system as well as any other applications that are provided. It is

important, therefore, to manage server resources carefully in order to permit

efficient and responsive operation of the server in the use of any application,

including instant messaging.

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Summary of the Invention

It is therefore an object of the present invention to provide an internet-based messaging system that permits users to intelligently poll the server for messages based on particular criteria.

5   It is a further object of the present invention to provide an internet-based messaging system that permits users to establish a message polling schedule to enable the timed-delivery of message to one or more selected computers or communications devices.

It is yet a further object of the present invention to provide an internet-

10   based messaging system that establishes a message polling schedule based on historical message activity.

It is still a further object of the present invention to provide an internet-based messaging system that performs modifications of an established message polling schedule in response to actions by users.

15   These and other objects will become apparent from the illustrated drawing and the description of the embodiments.

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Brief Description of the Drawing

The sole Figure is a block diagram of an internet-based messaging system

in accordance the present invention.

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Description of the Embodiments

Referring to the Figure, there is shown a computer-based network 10 that

incorporates a messaging system, and in particular an instant messaging system,

illustratively identified as 11. Messaging system 11 includes a central server 12,

5   which may be configured as a network server that performs a number of tasks or

applications in addition to managing messages. Illustratively, server 12 may form

a part of a server-based application network, where remote users of the network

can utilize the software applications residing on the network in a manner that

appears to the user that the application is running of their own computer. The

10   messaging capability of server 12 allows two or more individual users to send and

receive messages to and from one another in approximation of real time. Server 12

is shown illustratively as utilizing the internet, identified as element 14 in the

Figure, as its communications link. The Figure illustratively shows individual

users 16 and 18, although it is understood that many users can be associated with

15   messaging system 11 at any given time. Individual user 16 is shown as comprising

a computer 20 incorporating a processor 22 and memory 24, which may comprise

one or more types of computer memory, such as hard disc memory, RAM, or solid

state memory. User 16 also comprises a display 26, which may be of a variety of

types, including, but not limited to, cathode ray tubes or liquid crystal displays. ·

20   Individual user 18 is shown a comprising a computer 28 having a processor 30 and

memory 32, such as that used in computer 20, and a display 34. Computers 20 and

28 may comprise a variety of devices having the necessary processing and

communication functionality, such as desk-top PCs, laptop computers, internet-

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capable cell phones, and personal information managers (PIMs), for example.

User 16 communicates via the internet by way of communications means 36,

which may be any type of communications device, including wired or wireless

devices, such as cable modems or telephonic modems, for example. Likewise,

5   user 18 communicates through the internet using communications means 38, which

may also be a variety of different communications devices.

The Figure illustrates server 12 as managing the messaging system of the

present invention, but peer to peer messaging systems are also available and the

present invention is equally adaptable to peer to peer systems and server-based

10   messaging systems. Server 12 includes a processor 40, memory 42, and a

communications device 44 operating through a firewall 46. Server 12 may also

include other components and elements unrelated to the management of a

messaging system, but which may be used with such system as described below,

such as word processing and database management, for example.

15   As part of the implementation of the messaging capability of the network

shown in the Figure, central server 12 also incorporates message management

software 48 illustratively shown as residing in memory 42. In a similar fashion,

computer 20 of user 16 also comprises a messaging software application 50 which

resides in memory 24, which computer 28 includes messaging software 52 residing

20   in memory 32. Messaging software 50 and 52 is designed to be compatible and

work with message management software 48 of server 12.

In operation, server 12 operates in a "stateless" manner, with connection

being made to individual user computers on a request basis. Known messaging

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systems operate with the user's messaging software application keeping an open

communication socket open to the server at all times that the application is

running. Even though message may include the recipient's email address, the

message will be sent to server 12 for routing. Maintaining a continually open

5   socket utilizes server resources in an inefficient and wasteful manner. The

messaging system 11 of the present invention, on the other hand, operates using a

message polling technique, where the users' messaging software application, such

as software 50 or 52, polls or "calls" the server 12 to determine if message

intended for that user are waiting to be delivered. As stated above, this is different

10   from standard messengers where the application keeps an open socket connection

to the sever. The implementation of the present invention is more scalable than a

"connected" system, since a "stateful" connection is not continually kept and more

users can be accommodated and services with the same overall resources.

In an aspect of the present invention, messaging system 11 utilizes

15   intelligent dynamic polling, where the polling schedule, i.e., the intervals between

requests to the server for messages, is adjustable within a configurable range. This

dynamic polling may be based on a variety of different "rules." One form of

dynamic polling is based

on the current level of message activity. Using user 16 as an example, software

20   application 50 polls server 12 more often if there is current messaging activity. If

there is no messaging activity, however, software 50 polls server 12 less often.

The delay between polling server 12 is increased if no messages are waiting when

polling takes place. For example, server 12 may be initially polled after 30

seconds. This poll time is increased by 10 seconds until a maximum polling

interval, e.g., 90 seconds, is reached. If no messages are waiting or available after

30 seconds then the next poll will occur after 40 seconds, then 50 seconds, up to

the maximum interval. If a message is received at any polling occurrence, the

5   delay to the next poll of the server will be reset to 30 seconds.

A second form of dynamic polling is based on statistics derived from

historical activity. A user's messaging activity is recorded over time, and

statistical summaries are made and used to adjust the polling schedule or intervals

in accordance with a user's predicted activity. For example, if user 18 is most

10   active daily from 8:00 am to 9:00 am then user's software 52 will poll sever 12

more often during this time and less often outside this time. Additionally, when

server 12 is polled by any user, any new messages waiting at the server for that

user are returned in the response to the poll. This saves the server from being

polled for individual messages.

15   In accordance with other aspects of the present invention, software 50 and

52 will not poll server 12 when the respective users' screen saver is running or the

user has "locked" the computer, e.g., implemented a password-protected state. The

message server is not polled if the user is not logged on to the system.

Individual users can also create a schedule of when to poll for new

20   messages. This allows server 12 to be polled only during the times and days of the

week selected by the user, which permits a user to configure message software

applications to run on different computers (e.g. home and office) without conflicts,

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as each computer will only get messages sent within scheduled polling intervals assigned to that particular computer.

Although server 12 operates in a stateless manner, it is of course possible to implement a peer to peer messaging system that maintains open communication
5   sockets between users. Based on user activity, messaging system 11 could implement whichever connection was best suited to the current activity of the users, with such decision being made by either server 12 or the application, e.g., software 50 or 52, residing on the users' computer.

The present invention also contemplates the implementation of application-
10   to-application messaging such as, for example: sending meeting requests from PIM to PIM (e.g., in iCal format) and receiving replies. The message recipient can view the request and either accept or decline the meeting. Alternatively, automatic scheduling of meetings and events among many users may also be accomplished in this manner, as the messaging software residing on each PIM can interface with
15   calendar and scheduling software to determine available times and dates, and coordinate with each of the other addressed PIMs to set a meeting date and time. Application-to-Application messaging also permits the implementation of a "remote clipboard" function which allows the messaging application software to copy data from one computer and paste it to the Windows Clipboard on another
20   computer, so a user on that other computer can paste the data from their clipboard into another application running on that computer.

In accordance with another aspect of the present invention, messaging software applications 50 and 52 may permit a user to select who can see whether

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they are online or offline, i.e. a user's "presence." With this feature implemented, those users who want to see this user's presence must submit a request to the user. The user can either accept the other user's request, meaning that the other user will receive presence information from this user, or decline the other user's request,

5   meaning that the other user will not receive presence information from this user. If a user accepts the request, the requested is notified directly whenever the user goes online or offline.

Any user who has not requested another user's presence, or has been denied a request, will always recognize that other user as being offline. A user can also

10   block their online presence on a user-by-user basis. For example, a user may want to block their presence information from being sent to one requester but still send their presence information to other requesters.

Other features of the messaging system of the present invention may include the ability of the messaging software application to autorespond when a

15   user is not available, the ability to organize users by groups and send messages to a group, block messages from particular users, the ability to save a message thread on server 12 in order to retrieve the thread at a different time or from a different computer, validating a user's email address when adding that user to a contact list to prevent adding users who are not supported by valid addresses, the ability to

20   migrate the messaging system across various operating system platforms, e.g., Microsoft Windows, Linux, Apple, the ability to interoperate with other messaging protocols, such as ICQ, AOL Instant Messenger, MSN Messenger, for example.

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Messaging system 11 can also aid in the implementation of an anti-spam

control by establishing a minimum time that can occur between messages.

Messages that arrive in rapid sequence with a message-to-message interval less

than the established or selected minimum time could be ignored, deleted, or

5   automatically moved to a lower priority folder.

While the present invention has been illustrated in the drawing and

described in detail in the foregoing description, it is understood that such

illustration and description are illustrative in nature and are not to be considered

restrictive, it being understood that only the preferred embodiments have been

10   shown and described and that all changes and modifications that would be apparent

or would occur to one skilled in the art are to be protected.

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What is claimed is:

1.   A messaging system comprising:

        means for polling a message server at a first time to determine if any

5   messages are present;

        means for polling said server at a second time to determine if any messages

are present; and

        means for determining the interval between said first time and said second

time in response to information received from said server at said first time.

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2.   The messaging system of Claim 1, wherein said information received from

said server comprises an indication of the presence of one or more messages.

3.   The messaging system of Claim 1, wherein said means for determining said

15   interval increases said interval when no messages are present at said server.

4.   The messaging system of Claim 1, where in said means for determining

said interval decreases said interval when one or more messages are present at said

server.

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5.   A messaging system comprising:

means for receiving messages via a message server from at least one

sender;

means for polling said server at a first time to determine if any messages

5   are present from at least one sender;

means for polling said server at a second time to determine if any messages

are present from at least one sender; and

means for determining the interval between said first time and said second

time based on an indication from said polling that one or more messages from at

10   least one sender is present at said server.

6.   A messaging system comprising:

a message server;

user means remote from said server;

15   polling means associated with said user means for making connection with

said message server at a first time to determine if any messages are present;

polling means associated with said user means for making connection with

said server at a second time to determine if any messages are present; and

wherein said polling means is substantially disconnected from said server

20   during the interval between said first and second times.

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7.　　A method for managing messages at a message server comprising the steps of:

polling said server at a first time to determine if any messages are present at said server;

5　　　　polling said server at a second time to determine if any messages are present at said server; and

determining the interval between said first time and said second time in response to information received from said server at said first time.

10　8.　　The method of Claim 7, wherein said interval is increased when on messages are present at said server.

9.　　The method of Claim 7, wherein said interval is decreased when one or more message are present at said server.